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The Evolution of the PADIS Programme
(1979 - 1984)

THE EVOLUTION OF THE PADIS PROGRAMME (1979 - 1984)

This paper attempts to summarize the contents of the main design documents prepared on the implementation of the present Pan African Documentation and Information System (PADIS). The purpose is to bring to the fore the highlights of each study or a number of studies prepared around the same time, so as to enable an understanding of the conceptual developments that have taken place since the idea for an African information system was put to paper in 1977.

Section A briefly cites the earliest proposals for an African information system.

Section B presents in a fairly detailed manner the fundamental concepts put forward by the Interagency Mission that prepared the prefeasibility study for DEVSIS-AFRICA.

Section C provides a very brief account of the implementation of the DEVSIS-AFRICA project or more properly, the first phase of the present PADIS project.

Section D recapitulates the main design features of the PADIS system as described in the design document prepared by ECA/PADIS in November 1980 (Document number E/CN.14/789 and E/CN.14/TPCW. II/6).

Section E presents the major ideas contained in the UNDP Inter-Country Project Document for the 'Creation, Strengthening and Consolidation of PADIS'.

Section F is a summary of the activities carried out during the period 1982-1984.

Section G provides a summary of the major critical opinions expressed by different specialists on the various aspects of the Project.

Section H contains concluding remarks.

A. Early proposals for an African information system

1. One of the earliest proposals for an African information system was the the African Development Information Network (AFDIN) promoted by the ECA c. 1977/78. At about the same time, there were proposals for an African Statistical Data Bank, again, to be promoted by the ECA.

2. At its Fifth Meeting, held in Rabat, Morocco in March 1979, the ECA Conference of Ministers endorsed Resolution 359 (XIV) DATA BANK* 1 which, inter alia, invited the Executive Secretary to provide resources to assist Member States to create national numerical and non-numerical information systems and services; to assist Member States to establish national data banks; and, to facilitate access of African countries to data banks of industrialized countries.

B. The DEVSIS-AFRICA Prefeasibility Study * 2

3. The prefeasibility study for DEVSIS-AFRICA is, by far, the most comprehensive study conducted in connection with the present PADIS Programme. It seems the preparation of the Resolution mentioned in the last paragraph had also benefited from the prefeasibility study, by which time the preliminary findings of the latter have been known.

4. The problem to which the study addressed itself to is presented in the report as follows: "... it has been recognized for some time that the situation with respect to information about socioeconomic development is far from satisfactory" and continues to elaborate the benefits to be derived from the exchange of development experience among countries. In conclusion it states "it was with these considerations in mind that the Mission studied the feasibility of setting up a Pan African information system addressed to the mission of development." Therefore, "the structure of the system proposed in this report to be called DEVSIS-AFRICA - will follow, in most respects, the design proposed for DEVSIS ..."* 3

5. However, " ... DEVSIS AFRICA will address itself, to a greater extent than was proposed in the DEVSIS (global) report to the needs of science and technology policy makers. This slight modification of the DEVSIS scope is justified by the importance of science and technology policy to development and by the dearth

* 1 United Nations; Economic Commission for Africa: Annual Report, April 1978 to April 1979, United Nations, New York, 1979; p.70

* 2 ECA-OAU-IDRC Mission; DEVSIS-AFRICA: Prefeasibility Study for a Pan African Documentation and Information System for Social and Economic Development; United Nations; June 1979, 253 p.

* 3 Ibid., p. 7-8

of information services in this field in Africa"* 4

6. Having admitted the need for expanding the scope of the system proposed by the DEVSIS global study when applying it to the African situation, the study continues to state, "one can envisage for the future, a Pan African network of regional and subregional information systems, established, like DEVSIS-AFRICA in accordance with international guidelines.* 5

7. More importantly one reads the following: "The Team has proposed that DEVSIS-AFRICA be a mission oriented information system within the broader framework of Pan African information system and network. In order to support the development of DEVSIS-AFRICA, the team has recommended assistance to African Member States to build national information infrastructures and information handling capabilities. Member States would thus not only be able to participate in ... DEVSIS-AFRICA but also in other Pan African information systems".* 6

8. With reference to system development and the activities of DEVSIS-AFRICA the Team provided recommendations on a wide spectrum of topics including: flexibility in system design; development of common norms and guidelines; provision of advisory services and training to Member States; linkages with other information systems; coordination with other information programmes and projects; coordination of financial assistance to member states; and, evaluation mechanisms.* 7

9. With reference to the outputs of DEVSIS-AFRICA, the Team recommended that DEVSIS-AFRICA undertakes: cataloguing, indexing and abstracting; current awareness and retrospective bibliographic searches; selective dissemination of information; consolidation and repackaging of information; referral services; document delivery; and, advisory services to African countries on information and documentation problems.* 8

10. One of the most valuable contributions of the DEVSIS-AFRICA Prefeasibility Study was its analysis of the state of socio-economic development information and documentation in Africa at the national, subregional and regional levels. It could be safely assumed that the major conclusions arrived at by the Study Team at the time are still valid today. Among the conclusions reached upon analysis of information infrastructures at the national level, the following assume major importance: the diversity of the situation at the individual country level; the absence of national information policy-making organs; the absence and, in some cases, the ineffectiveness of legislations; the

* 4 Ibid.
* 5 Ibid.
* 6 Ibid.
* 7 Ibid., p.10-11.
* 8 Ibid.

scarcity of material, human and financial resources; the use of backward information processing, storage and dissemination methods; and, the low priority given to (or the exclusion of) information systems and services in national development plans.* 9

11. The Study Team was of the opinion that " a precondition for the establishment of any regional system is the assurance of an adequate level and volume of input from participating countries" and hence, "... the strategy most appropriate for establishing a regional system would be to provide member states with possibilities of building their national information infrastructures ..."*10

12. In addition, the Study Team identified the serious gap in information personnel needs and availabilities, particularly: the inadequacy of training facilities; the traditional library science approach adopted by most schools of information science; the severe shortage of middle-level specialists and technicians; the low status accorded to information personnel; and, the paucity of training opportunities in modern information handling techniques.*11

13. With regard to national information services, the Study Team concluded that the activities and outputs of existing centres were not usually geared towards meeting actual needs. Also, the fact that existing retrospective bibliographies and current awareness services have difficulties in supporting document delivery has diminished their usefulness. The Study Team also noted that the absence of standard policy on confidentiality of documents has acted as a barrier to the smooth inter-country exchange of information.*12

14. Concerning the state of socio-economic information infrastructure at the subregional level, the Study Team concluded that several subregional institutions possessed well established documentation programmes while others had plans to set up similar programmes in the future. Therefore the Team felt that they should be included as special participating centres for DEVSIS-AFRICA.*13

15. The Team further felt that African regional agencies should play a role similar to that of subregional institutions as special participating centres.*14

16. In its synthesis of principles and guidelines for the design and establishment of a Pan African information system, the Team discussed a host of issues including: the strategic value of

* 9 Ibid., p.21-24
*10 Ibid., p.25
*11 Ibid., p.25-26
*12 Ibid., p.28
*13 Ibid., p.29
*14 Ibid., p.33

information; the need to pool and share development information; and, the need for wide and equitable access to development information produced in the industrialized countries and other developing regions. In translating these principles into design features the Team concluded that a Pan African information system should promote the collection and preservation in Member States of all development information, including scientific and technological information; and, that it should attempt to obtain a wide spectrum of development information relating to countries and regions outside Africa through equitable and fair terms of exchange.*15

17. From the point of view of a systems development methodology the Team felt that a Pan African information system should make possible a full satisfaction of development information needs by enabling access to both numerical and non-numerical information. Moreover, the need for accurate, valid, comprehensive and up-to-date information was stressed.*16

18. Further to the quality issues mentioned above, the Team examined the "question of how to locate the different activities and components of the system both in space and time and how to organize each activity using the range of technological means and resources available ...". In this context, the decisions on where to place the responsibility for performing each of the activities (acquisition, processing, storage, retrieval and delivery of information) and what technologies and related equipment and personnel resources to use (manual or computerized processing, highly qualified vs. less qualified personnel, use of postal vs. telecommunication data transfer) figured prominently. Upon consideration of this factors it was recommended that a Pan African information system should ensure a rational division of work for the acquisition, processing and delivery of information. Also, it was recommended that the system "... should benefit from modern technology, ... and that it should try to cut down the delays and costs of information transfer by using the most efficient physical transport or telecommunication means."*17

19. Another important design issue considered by the report involves decentralization. It was stated that although centralization might result in substantial economies, decentralization, on the contrary ensures that the persons responsible for input and output are close to the sources of production and to the users of information. The main components of the decentralized system were identified as national participating centres on the one hand, and a coordinating centre that will serve as "... a component able to coordinate, harmonize, stimulate and support the functioning of the other components".*18

*15 Ibid., p.50-55
*16 Ibid., p.56
*17 Ibid., p.59-60
*18 Ibid.

20. As regards the implementation of the system, the Team recommended that a three-phase, ten-year programme be launched. The proposed phases were Phase I, 1979-81; Phase II, 1982-84; and, Phase III, 1985-89.*19

21. The Team also recommended that "... a computerized data base should be created by using the modified DEVSIS input sheet ... to ensure compatibility with other relevant systems".*20

22. As regards selection of computer hardware and software, the Team felt that "...preference should be given to programmes (software) which can be replicated at no cost to Member States" and it identified the ISIS, MINISIS and MILOR software as suitable choices. In light of these, the possible choices for hardware were:

a) if the ISIS software is chosen; IBM 360 or 370, RIAD ES Series, and AMDAHL,

b) if MINISIS software is chosen; Hewlett Packard 3000 series II, III or 33,

c) if the MILOR software is selected; any minicomputer that has a FORTRAN IV compiler.*21

23. In addition, it was stated that "... the selection of the system's computer for the first phase should not necessarily take into account the full operational capability required from phase III onwards ... and that a low-cost, high-performance (e.g. a minicomputer) would meet the needs for phases I and II of the project."*22

24. The following important conclusions that pertain to the present state of the PADIS programme can be drawn from the last several pages:

a. that DEVSIS-AFRICA shall be a mission-oriented information system for the development sciences;

b. that, DEVSIS-AFRICA shall operate within the broader framework of a Pan African information system and network;

c. that, a Pan African information system and network should enable access to both numerical and non-numerical information;

d. that, there is a need to assist member states to enable them to develop their information infrastructure

*19 Ibid., p.61-63
*20 Ibid., p.74-75
*21 Ibid., p.75-76
*22 Ibid.

with a view to enhance their participation in the proposed system;

e. that, improving the poor state of information and documentation activities in the African region requires a coordinated and comprehensive programme involving legislative, policy, educational and institutional action;

f. that, a Central Coordination Office, with a capacity to undertake active documentation work, be set up to implement a programme at the national, subregional and regional levels;

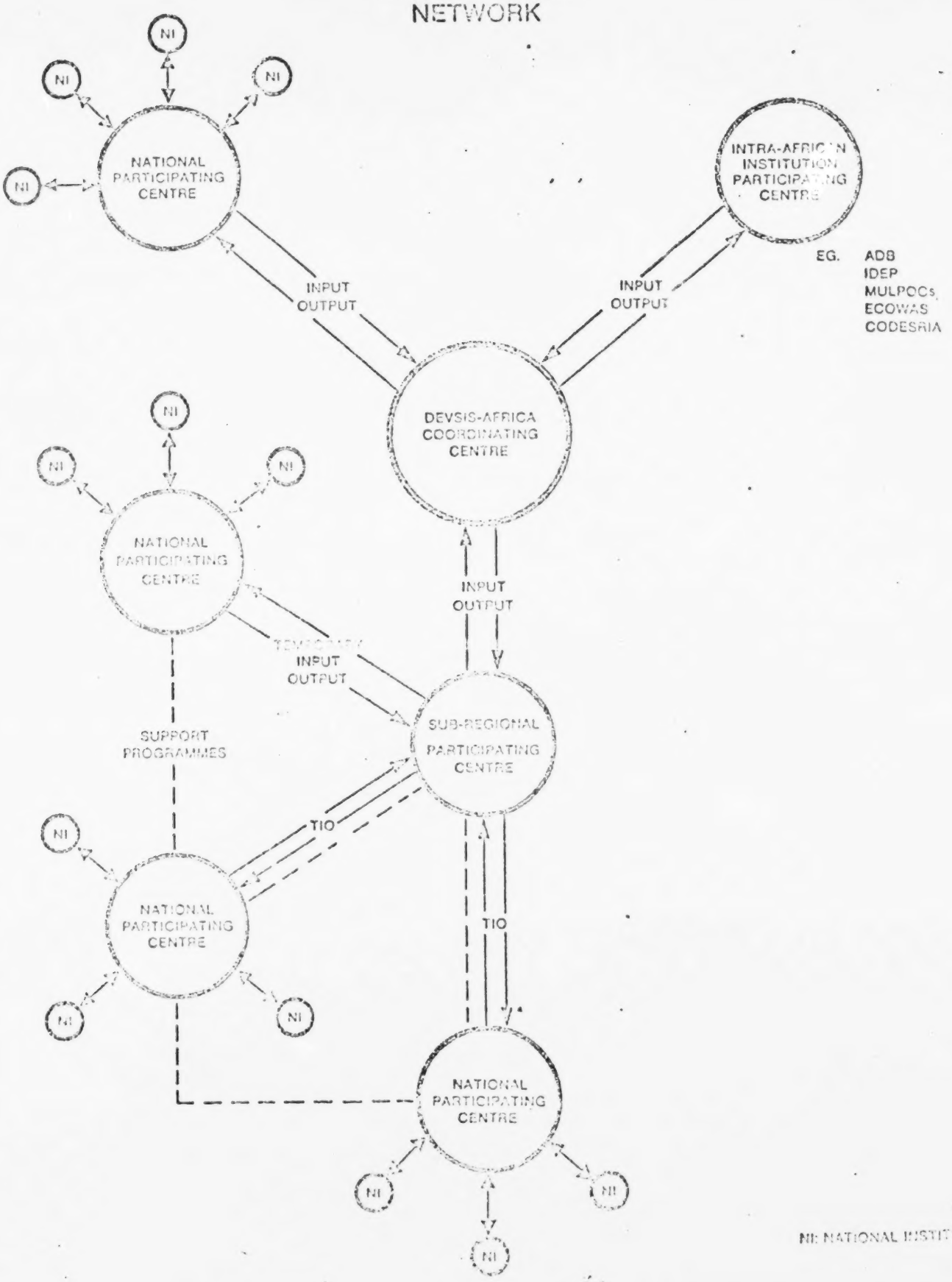
g. that, a Pan African information system and network should utilize up-to-date information gathering, processing and dissemination mechanisms and technologies that have a capacity to overcome the physical barriers to the smooth exchange of information; and,

h. that, the PADIS network should be based upon a rationally decentralized discharge of activities and responsibilities.

25. The illustrations on the next three pages provide some useful explanations on therelationships between DEVSIS-AFRICA, the Pan African information system and other international information systems and networks.*23

*23 Ibid., p.54, 72 and 73 respectively.

DEVSIS-AFRICA NETWORK



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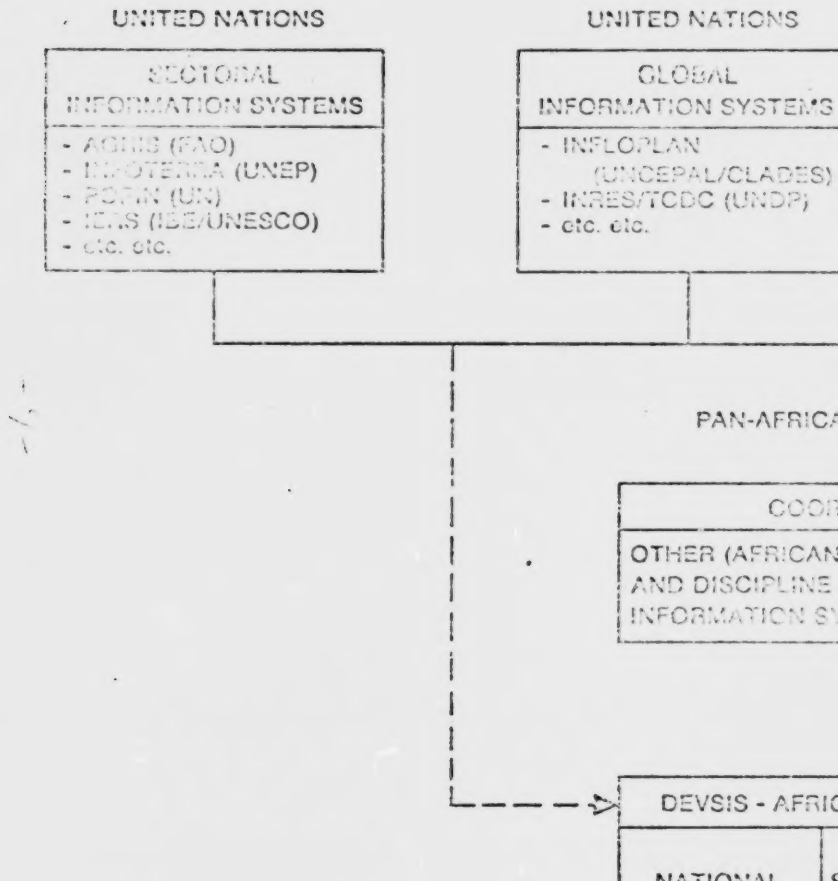

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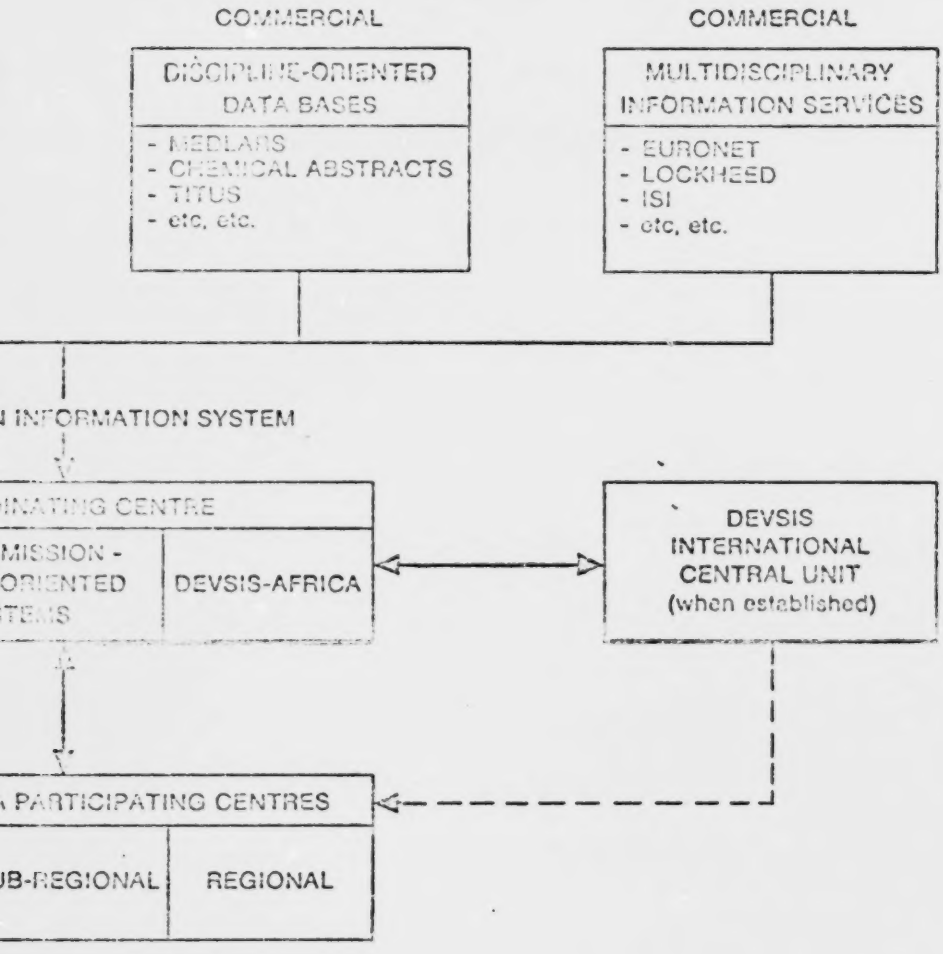

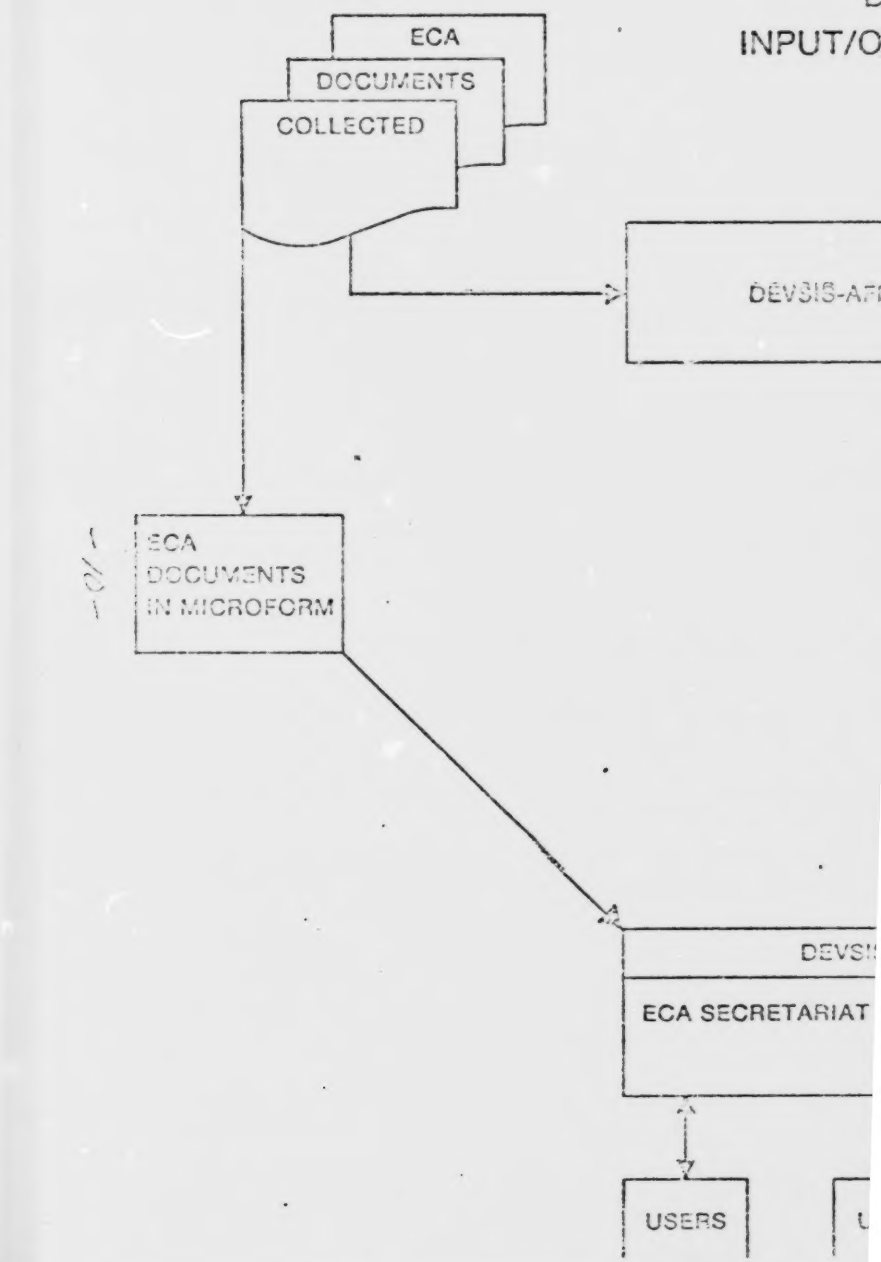
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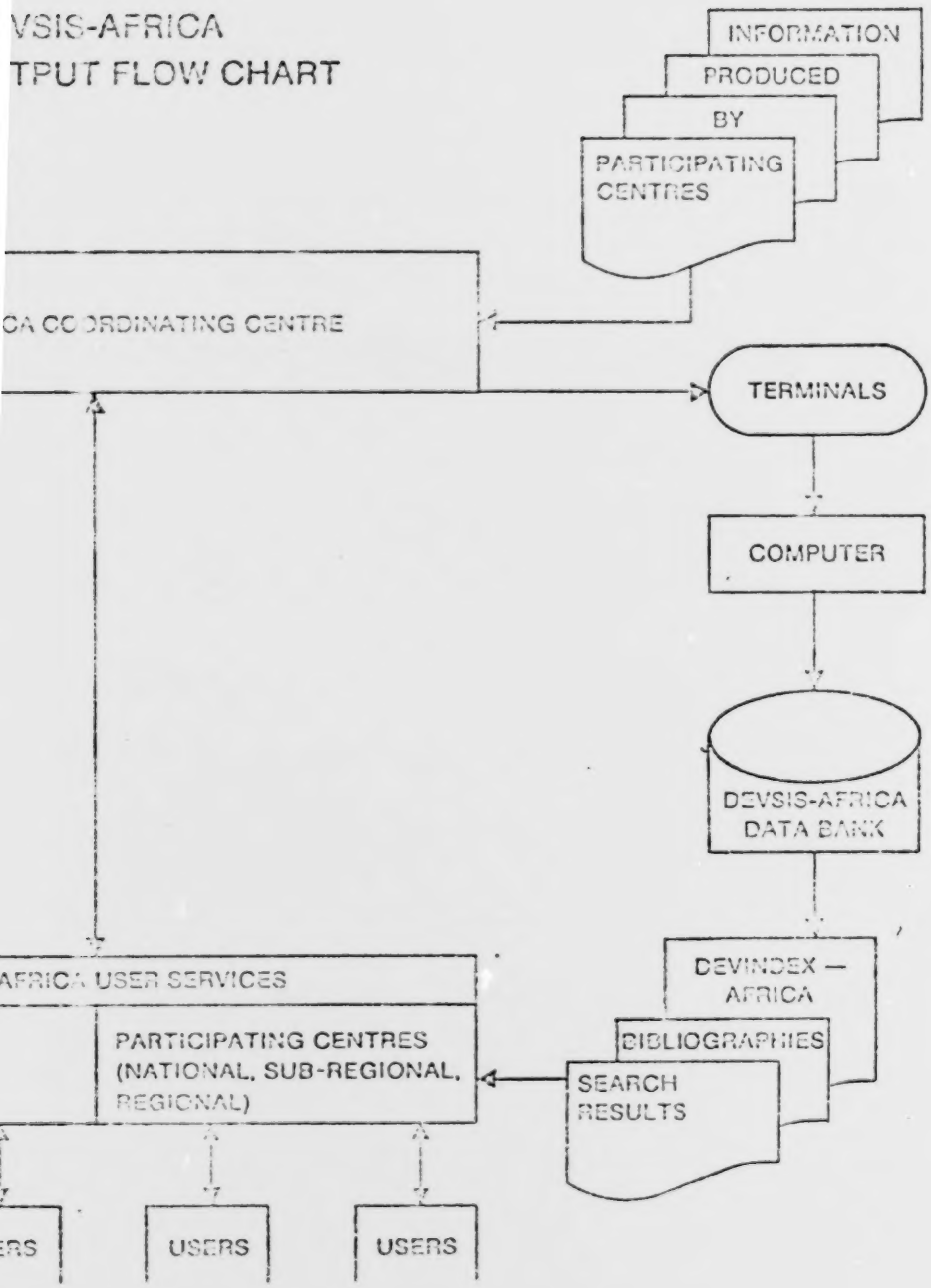

C. Implementation of the First Phase of the PADIS Programme

26. The implementation of the present PADIS Programme was officially commenced in January 1980 with the creation of the Central Coordination Office (CCO) of "DEVSIS-AFRICA".

27. In accordance with the recommendations of the DEVSIS-AFRICA Prefeasibility Study discussed over the last pages, the CCO was organized with a Computerized Documentation Section, Computer Operation Section and a Reprographic and Maintenance Unit. The activities of these organizational units was supervised by a Project Manager and a Chief Technical Advisor.

28. One of the preliminary tasks carried out by the CCO was the preparation of methods for the analysis of documents (cataloguing, indexing, abstracting) and for the preparation of bibliographic records. In this endeavour, due recognition was given to norms and standards developed internationally by UNISIST, DEVSIS and AGRIS. The resulting worksheet and manual for record preparation were used to analyze documents prepared by ECA in the discharge of its activities. These worksheets were in turn used to create the first PADIS data base on development literature (PADIS-DEV) using the MINISIS data base management tool and the HP3000 computer configuration.

29. Immediately following this activity, an Inter-agency Working Group Meeting on Compatibility with PADIS was organized to discuss, aside of technical compatibility issues, the goals set up by the management of PADIS to realize what the DEVSIS Prefeasibility Study referred to as the 'Pan African Information System and Network'.

30. The design document*24 prepared for the purpose was subsequently presented to, and endorsed by, the ECA Conference of Ministers at its Seventh Meeting held in Freetown, Sierra Leone in May 1981.*25 It was at this stage that the title "DEVSIS-AFRICA" was changed to "Pan African Documentation and Information System - PADIS."

D. Major Design Features of the Pan African Documentation and Information System (PADIS)

31. According to the design document mentioned above, the main objective of PADIS is "... to provide ready access to information for policy makers, technicians, planners, financiers and all others engaged in the economic and social development of African

*24 UNECA; Establishment of the Pan African Documentation and Information System: Progress Report and Future Work Programme; UNECA, November 1980; (E/CN.14/789, E/CN.14/TPC/. II/3); 24 p.
*25 United Nations; Economic Commission for Africa; Annual Report, April 1980 to April 1981; United Nations, New York, 1981; p.79-80.

States."*26 It was stated that this primary objective will be met through the following activities:

a) the establishment of a Central Coordination Office equipped with the capacity to collect, process and disseminate information;

b) the creation of a data base containing references to documents dealing with issues of concern to African economic and social development;

c) the creation of a set of complementary (sectoral) data bases;

d) the establishment of interconnections with international information networks;

e) the exploitation of the above mentioned data bases (a to d) to provide information in the form of microfiches and hard copies of original documents, printed indexes, etc.

f) the provision of assistance to Member States to strengthen their national information infrastructure with a view to establish a network of participating centres;

g) the dissemination of information among the network participants using the most recent data transmission technology; and,

h) the organization of requisite training programmes.*27

32. It should be noted here that the above activities were formulated in furtherance of the design features elaborated by the DEVSIS Prefeasibility study discussed in the last section. Another point worth noting here is that DEVSIS-AFRICA, dealing with mission-oriented, development information, has now become one of the components within the broader framework of PADIS. The other major components of the PADIS system are the set of sectoral, complementary files (referred to in PADIS documents as PADIS-COM) and the information to be acquired through interconnections with international information networks.

33. In the implementation of the PADIS programme, the recommendation of the DEVSIS-AFRICA prefeasibility study to adopt a three-phase, ten-year programme was maintained. In this connection the design document, and the programmes contained therein as endorsed by the ECA Conference of Ministers at its Seventh Meeting, states that:*28

*26 UNECA, 1980; p.2.
*27 Ibid.
*28 Ibid., p.4.

"Phase I, 1980-81, to be devoted to the creation of the Central Coordination Office (CCO); setting-up of PADIS basic methodologies; installation of the PADIS/CCO computer centre; preparation of an index to development information contained in the PADIS data-base; training of personnel and users; and, design and implementation of a telecommunication link between PADIS/CCO and the EURONET network through the European Space Research Information Network (ESRIN) at Frascati, Italy.

Phase II, 1982-84, to be devoted to the implementation of an integrated data bank including Pan African sectoral files; training of personnel of collaborating centres; installation of computer centres at the level of MULPOCs; design of a telecommunication network using satellite technology; design of input-output centres at the national level equipped with computer facilities and satellite communication stations; organization of a training plan for participating centres; and, design and implementation of a powerful computer centre for the PADIS/CCO.

Phase III, 1985-89, to be devoted to the installation of the PADIS system and network including input, output and storage devices at subregional and national levels; full exploitation of the PADIS network and its extension to all African countries; organization of input and output procedures; and, the organization of training programmes."

34. Concerning the territorial subdivision of the region into sub-regions, the design document featured five groupings, namely, Central, Eastern, Northern, Southern and Western Africa. It was also stated that the implementation of the PADIS programme will be "... realized by extending the system throughout the African continent via the PADIS subregional offices."*29

35. Concerning the financial outlays required to implement the total programme, the document estimated a cost of US$ 160 million.*30

36. Concerning the services to be provided by the PADIS system the design document enumerated the following: current awareness service through printed indexes; question and answer services; and, selective dissemination of information-all three services to be supported by either document delivery or a referral service. Concerning the interrogation of remote data bases it was stated "... the fastest available means (mail, telex, etc) should be utilized" with the understanding that "an advanced data transmission system ..." is required to enable remote tele-interrogation

*29 Ibid., p.5.
*30 Ibid., Annex II.

and tele-data transmission at a later date.*31

37. The tele-data transmission proposals for the PADIS network envisaged an interconnection both within Africa and between Africa and other regions. The categories of data to be transmitted were identified as (a) the interactive interrogation of data bases; (b) the printing, on a local printer, the results of interrogations; and, (c) the transmission of original or full text documents selected as a result of (a) and (b) above. Facsimile and/or digitalized high speed transmission methods have been cited as possibilities.*32

38. Concerning sources of funding, the document cited African Governments; multilateral agencies such as UNDP, ADB, the World Bank and IDRC; and bilateral agencies such as EEC and other developed countries' Governments as prospective donors. African Governments were expected to furnish 10% of the total estimated ten-year budget of US$ 160 million, or approximately 20% of the estimated budget for Phase III, 1985-89.*33

E. Main Design Features of the Second Phase of PADIS, 1982 - 84

39. As discussed earlier the First Phase of the PADIS Programme was mainly concerned with (a) the realization of DEVSIS-Africa including the establishment of the Central Co-ordination Office, the installation of equipment, the recruitment and training of personnel, the setting-up of data bases, and the publishing of indexes to development literature; and, (b) the preparation of design documents oriented towards the realization of the Pan-African Documentation and Information System and its network.

40. In addition to the design document discussed in Section D above, several documents that outline the principles, plans and programmes for the implementation of the PADIS system and network were prepared in the course of 1981. The most comprehensive and illustrative of these was the Project Document for the UNDP Inter-country Project entitled "Creation, Establishment and Consolidation of PADIS - Phase II".*34

41. In the discussions on 'immediate objectives' and 'workplan' of the above mentioned project, two new features that concern the 'Pan African Statistical Data Bank' and the 'Referral Information System for Technical Cooperation among African Developing Countries' have been incorporated. With the incorporation of these components the information scope of the PADIS system had reached its present limits.

42. The following activities and corresponding outputs were

*31 Ibid., p.6.
*32 Ibid.
*33 Ibid., Annex II.
*34 UNDP; Creation, Establishment and Consolidation of PADIS - Phase II; (1981), 21 p.

expected of the Second Phase of the PADIS Project:*35

a. Strengthening of the Central Co-ordination Office of PADIS to enable it to cope with its greatly increased responsibilities;

b. Expansion of the development information data base (PADIS-DEV) and the creation and/or expansion of sectoral bibliographic files (PADIS-COM);

c. Designing and implementing an integrated numerical data bank;

d. Designing and implementing a referral information system in support of technical cooperation among African countries;

e. Establishing interconnections with international information networks;

f. Exploitation of information resources available through b,c,d and e above to meet user needs through printed indexes (current awareness), retrospective searches on demand, selective dissemination of information, etc. as well as clearing house activities.

g. Designing a Pan African data transmission network utilizing the most recent technology;

h. Assisting Member States in strengthening their national information infrastructure, particularly in the creation and development of their national centres;

i. Organizing training programmes, at all levels, in support of all the above activities;

43. The amount of financing approved under this UNDP Project was US$ 2.78 million out of which $1,200,000 was earmarked for personnel; $440,000 for training; $370,000 for expendable equipment and supplies; and, $766,500 for nonexpendable equipment.*36

F. Implementation of the Second Phase Programme of PADIS, 1982 - 1984: A Summary *37 *38

44. Concerning the strengthening of the Central Co-ordination Office, significant achievements have been made particularly in enlarging the size and quantity of staff resources and in

*35 Ibid., p. 2-7.
*36 Ibid., Annex II
*37 See background documents on other agenda items for a more detailed account.
*38 The order of presentation here follows, for ease of reference, the order of activities presented under paragraph 41 above.

expanding the computing and storage capacity of the Computer Centre. Regarding the former, the CCO possesses valuable expertise in the team of data processing specialists, documentalists, bibliographic data base managers and reprographic technicians it employs. In addition to their regular duties at the CCO, these staff have proved valuable in delivering training courses in their respective competences; in assisting the development of norms and methodologies and in testing them; in providing advisory services; etc.

45. The hardware/software mix installed at the CCO Computer Centre have been proved suitable for the treatment of both bibliographic and statistical information. Application programmes development for the PADIS statistical data bases (being implemented under the leadership of the ECA Statistics Division) is a further testimony to the versatility of the equipment.

46. The CCO has accumulated a vast and unique experience in the course of its efforts to establish its own active documentation system and in its endeavours to assist Member States to set up their national centres. Although the great diversity in national situations would always present a fresh challenge, the CCO is, more than ever before in a better position to discharge its responsibilities in an effective manner. The fact that the CCO is now receiving a growing number of requests for opinions, advise and assistance on proposed programmes in the information and documentation field from Member States, United Nations Agencies, non-governmental and inter-governmental agencies signifies that it is indeed filling an important gap that would have otherwise remained a barrier to further developments in this field.

47. Concerning the expansion of the development information data base that was created with the commencement of the DEVSIS-AFRICA Project (PADIS Phase I) in 1980, significant progress has been achieved with the increasing size of the file (c. 5000 records in 1984) as well as with the diversification of the document sources. The data base now contains records that were prepared at ECA as well as those that have been prepared in cooperation with documentation centres in Botswana, Guinea and Niger.

48. As regards the acquisition of sectoral bibliographic files to be made available to African users through the CCO, two United Nations bodies, the ILO and the United Nations Department for International Economic and Social Affairs, have put subsets of their respective data bases at the disposal of the PADIS/CCO. These data bases are available for online interrogation and their conversion to PADIS formats has been extremely smooth.

49. The design of the numerical component to be composed of, ultimately, a statistical data bank and other relevant numerical but non-statistical data banks has been, relatively, a more time and resource consuming exercise. The statistical data bank, designed in three levels of data bases integrated into one system of information, is being executed under the leadership of the ECA

Statistics Division. The work on level I and II being substantial has been delayed due to lack of resources. The work on the level III data base is progressing. It now contains over 60,000 time series statistical data on social, demographic, economic and foreign trade statistics. Each data entry contains numerical values for up to 21 years. The level III data base is currently available online for internal users and the ECA Statistics Division has produced the African Statistical Yearbook parts I and III entirely from this data base. The system design, structure of the data bank and the progress of the work is contained in the report PADIS-STAT.

50. The referral information system in support of technical cooperation among African countries was included as a subsystem of the PADIS system in the course of 1982. The activities of this component were executed using a special grant put at the disposal of PADIS by UNDP as part of its worldwide programme to accelerate technical cooperation among developing countries (TCDC). This component will ultimately give rise to a range of integrated data bases on available African expertise, institutions and research and development projects. Until now, the personnel data of about 8,000 experts has been collected and compiled using data collection forms prepared at PADIS. The forms have been further processed to enhance computerized storage and retrieval. The first volume of the Directory of African Experts has been published and its four supplements are under print.

51. Establishing interconnections with international information networks for the purpose of making available to African users information generated in the industrialized world and that is of relevance to African development has been under consideration. This interconnection has been frequently confused with the data transmission network plans of PADIS which aim at the fastest possible method of information transfer between participating centres of the PADIS network as described below. An experiment has been conducted in collaboration with the European Space Agency (owner of the European Space Research Information Network) using a dial-up terminal installed at PADIS/CCO in Addis Ababa and a normal telephone line. The outcome, although unsatisfactory due to the low speed of the channel and the frequent intervention of PTT operators, has demonstrated possibilities for interconnections at a slightly enhanced level. In addition, the European Space Agency, upon the request of the ECA Executive Secretary had approved access by the PADIS/CCO to the ESRIN data bases free of charge for a period of six months. This access has not been realized due to the exorbitant rates demanded by the Ethiopian and Italian PTT administrations.

52. The information resources currently available at the CCO as described earlier consist of bibliographic data bases, the statistical data bank and the computerized version of the Directory of African Experts. The contents of the development literature database (PADIS-DEV) is brought to the attention of users by the publishing of DEVINDEX-AFRICA, four annual issues of

which have been printed to-date. User requests (on average 200 per year) emanating from the DEVINDEX-AFRICA have been serviced with the provision of mostly photocopies although PADIS maintains microcopies of documents cited in the DEVINDEX. User services on the statistical data bank to the general public have not commenced as yet due to the incompletion of the preparations. The Directory of African Experts has been widely circulated but its utilization has not been assessed partly because feedback mechanisms have been difficult to establish.

53. The establishment of a data transmission network using up-to-date technologies, including satellite communication has been the most controversial aspect of the PADIS Programme. The idea to use such an expensive and technically as well as managerially cumbersome method emanates from the poor state of the other communication mechanisms that operate in Africa today such as slow and unreliable postal, telex and telephone services. This reality has, perhaps prematurely, induced the management of PADIS to propose a tele-data transmission network based on satellite technology. The most significant work conducted in this direction constitutes the identification of the categories of information to be transmitted and to project (using data traffic estimation methods developed by the European Space Agency) possible data traffic growth among African countries.*39 Given the extremely scanty or nonexistent data on data traffic at present, one is forced to question if there was a better method to do so. Moreover, the study prepared by PADIS provided estimates for on-line and off-line channel capacities including the capacity required for full-text or primary document transmission.*40 Subsequently, a number of consultations were conducted with experts in the field who have provided a diversity of opinions. These opinions are dealt with in the background document on the agenda item concerning the PADIS data transmission network.

54. Assisting Member States in strengthening their national information structure has not been a simple task either. The factor most responsible for the difficulties encountered by PADIS in this area is the lack of priority information and documentation activities are given in national development plans and strategies. The initial action taken by PADIS in this connection was to sensitize African Governments on the need for and the benefit to be derived from strengthening national information infrastructure. The sensitization took the form of model project documents that described the objectives, activities and outputs of hypothetical national centres. This effort was subsequently coupled with field missions by PADIS staff to the majority of African countries. Presentations by PADIS at numerous meetings sponsored by the ECA and other African organizations have, more often than not, stirred discussions and debates which have

*39 UNECA/PADIS; Report on the Preliminary Technical Specifications of the Planned Communication Satellite System for the Pan-African Data Transmission Network; March 1981; 39 p.

*40 Ibid., p. 24-29.

contributed to increased public awareness. However, the response of Member States to these stimulations have been slow and in the best of situations, they were not as dynamic as one would have expected. Nevertheless, a higher degree of realization is observable and in some cases concrete results are being achieved in Benin, Botswana, Niger, Guinea, the Sudan and Zambia. Evidently, the above discussions are not applicable to Member States of the North African region where developments in the information field have reached a higher order and where needs have evolved accordingly.

55. Along with the evolution of PADIS, the creation of subregional information and documentation centres has been gaining relevance within the PADIS Programme. In earlier studies, such as the DEVSIS-AFRICA Report, the role of subregional centres was equated with subregional institutions and organizations that should be integrated into the PADIS System as special participating centres. More recently, the trend has been towards the establishment of 'subregional coordinating centres' or 'subregional information and documentation centres' within the aegis of PADIS. Most documents prepared by PADIS including the preliminary study on the data transmission network have accorded important roles to the subregional centres whereas some expert opinions for various reasons have questioned their contribution in advancing PADIS aims. Nonetheless, PADIS was in the process of establishing subregional centres for the Western and East African subregions at Niamey and Lusaka respectively until current resource limitations forced their postponement. Instead, the equipment purchased for the purpose of these subregional centres will be put at the disposal of the Governments of Niger and Zambia to enable them set up their national centres with further technical assistance from PADIS. These national centres will in the meantime, and until PADIS resources permit the setting up of subregional centres, provide services for emerging information and documentation systems in the respective subregions. In the North African subregion, the Member States have opted to postpone the creation of a subregional centre until a suitable study is conducted.

56. The existence of a sound training programme has been considered a prerequisite to the implementation of the PADIS Programme at all levels. The nature of the PADIS Programme necessitates the provision of training in documentation, data base management and computer operation for the development of medium-level technical cadres. Equally important is the provision of professional training for the management of information and documentation systems including: design, development and operation of systems; management of computer centres; maintenance of norms, standards and methodologies; etc. At the specialists level there is a growing need for software and hardware engineers; telecommunication engineers; documentation and information scientists, etc. PADIS has been providing on-the-job training to a selected number of countries and institutions at the medium and junior professional levels. The training courses which lasted an average of four weeks emphasized practical work.

Special consideration was given to preparing staff members of prospective national centres as was the case with Benin, Botswana, Guinea and Niger. Apparently, it is beyond the capacity of PADIS to provide high level specialist training.

G. Critical Opinions Expressed by Individual and Groups of Experts on the PADIS Programme

57. Right from the stage of conception, the design and execution of the PADIS Programme has relied heavily on the work and advice of distinguished experts in the field of information and documentation. These technical experts had brought with them a wealth of knowledge and experience which has contributed in shaping the Project towards its present function and scope. Moreover, the fact that these experts were drawn from institutions and organizations that support and promote one type of or another information and documentation activities has aided the consideration of a broad range of principles and approaches prior to the formulation of the Project.

58. Secondly, PADIS being a Programme executed by the UNECA, has sought and acquired the support and guidance of Member States through the ECA Conference of Ministers. The Conference of Ministers had at its last six consecutive meetings considered a progress report and endorsed appropriate resolutions on PADIS. This is a clear indication of the degree of control placed in the hands of the Conference of Ministers and its subsidiary organs. It was by virtue of this control that the Conference of Ministers, upon the recommendation of the Conference of African Planners, Statisticians and Demographers, felt the establishment of a Regional Committee for PADIS a necessity.

59. Equally importantly, the ECA Executive Secretary has, on several occasions, invited external experts to consider and advise upon the programmes drawn up to execute the PADIS Project, the most notable of which are the "First Interagency Technical Experts Working Group on Compatibility with PADIS" and the "First PADIS Intergovernmental Meeting of African Computer, Documentation and Information Scientists." Also, several individual and groups of experts, with or without official function, have been received at PADIS whose observations have produced some valuable ideas.

60. The last three paragraphs provide indications that the PADIS Project has not suffered from a lack of expert advice or from a lack of control that is commensurate with its status.

61. Further, it is felt it will be rewarding for the members of the Regional Technical Committee to have an overview of the critical opinions expressed by experts on PADIS. The intention, here, is not to argue the validity of these opinions; some can be disputed effectively. Those that arose from inadequate clarifications should have found answer from the last several pages. More importantly, the relevant critical opinions will

help to rethink some of the fundamental issues and, with proper attention, will lead to the identification of the most suitable options and approaches.

62. One of the most common observations expressed by experts was that, "the PADIS Project was very ambitious in scope and therefore included a high element of risk, commensurate with its importance and with the needs to be met ..."*41 A similar opinion was expressed by J. Cazemajou of Satel Conseil: "PADIS seems to be an ambitious project which will encounter a lot of difficulties..."*42 Another expert, W.O. Aiyepeku of Ibadan University attached the ambitious nature of the Project to "... the negative impact of weak or nonexistent information infrastructure at national and subregional levels" and the substantial technical and financial assistance required.*43

63. Several experts were of the feeling that the implementation of the PADIS work programme suffers from insufficient and thorough studies. Others have remarked that "... the design documents of PADIS are not coherent and do not continue to elaborate the issues raised but remain unfinished by the DEVSIS report."*44 Some experts considered that "the study of various documents revealed contradictions in the objectives of the PADIS System, which aimed to be multidisciplinary and thus sometimes overlapped with other existing systems."*45 Other experts emphasized that the documents did not contain the same concepts, which led to changes in objectives. They considered that "vagueness in the concept and objectives, as well as the fact that Member States had not participated in the fundamental technical choices had led to questionable choice of hardware and software."*46

64. Contrary to the above a team of experts from the French Ministry of External Relations have concluded that:

> "... Without any means in the initial phase, confronted with entirely new technologies, the promoters of PADIS have not adopted the classic method which consists of preparing a series of technical and economic studies on

*41 UNECA/PADIS; Report of the First United Nations Interagency Working Group on Compatibility with PADIS; April 1981, p.24.
*42 J. Cazemajou; Mission Report on PADIS; Satel Conseil; January 1983; P. 8.
*43 Aiyepeku, W.O.; International Socio-Economic Information Systems: An Evaluative Account of DEVSIS-Type Programs; IDRC, 1983; p.39.
*44 Tahar, Ayouz; Rapport Special sur le Systeme d'Information Pan Africain (PADIS) Initie par la Commission Economique pour l'Afrique (CEA) pour un Montant Global Estime a 170 Million de Dollars E.U. Alger; Avril 1984; p.6.
*45 UNECA/North African MULPOC; Report of the Meeting of Experts on the Establishment of the North African Documentation and Information System; Tangiers; March 1984; p.4.
*46 Ibid.

prefeasibility, feasibility, etc. They deliberately adopted an approach which was at the same time political and pragmatic by launching an offensive ... and by proving the movement while walking ... considering the multidisciplinary, multidimensional and multilateral nature of the Project; considering also the political and administrative context in which it is inserted... one can think that this very concrete and at the same time very political approach was the only way to give birth to PADIS. The ten previous years had, in fact, given the proof that procedures and usual practices condemn to immobilization those responsible for such an ambitious task.
task.*47 *48

65. Several experts voiced the need for " ... the assistance of a technical committee of experts to guide ..."*49 the activities of PADIS. One expert has recommended the creation of two committees; one to guide the conception and design of PADIS; and another responsible for the implementation aspects.*50 Others were more concerned with the manpower capacities of the PADIS Project: "It is illusionary ... to believe that the Project can continue with the sole human and financial resources it possesses today ... The support of a team of technical and higher cadres with respective competence sufficiently rich to conceive all the developments to come and their details, as well as to lead to its successful end the implementation of the first concrete operations ..." is required.*51

66. The concerns regarding the data transmission network aspect of PADIS have been both of a policy and technical nature. This common concern was expressed by the group of experts from North African countries as "... PADIS was based on an unrealistic broadcasting network which had led to technological choices relating to communications which were not adapted to African reality ..."*52 Another expert considered the issue as "an unhealthy, early orientation toward heavy telecommunications which was capable of diverting scarce resources from the clear and worthwhile objectives identified in the system design".*53

67. The technical observations made to-date on the data transmission plans of PADIS are most conclusively analyzed by the French Appraisal mission as follows:

*47 Biraud, Gerard et al; Report of the Appraisal Mission on the Pan African Documentation and Information System; French Ministry of External Relations; January 1981; p.46
*48 Ibid., p.59.
*49 UNECA/North African MULPOC; p.5.
*50 Aycuz Taher, p.8.
*51 Gerard Biraud et al; p.60.
*52 UNECA/North African MULPOC; p.4.
*53 Aiyepeku, p.39.

"... basic distinction should be made concerning the bibliographic component between the transmission of bibliographic data (author, title, abstract, etc.) and the transmission of original or primary (full text) documents...[in the former] access to the user is not immediate and it assumes that the user obtains afterwards the selected work or works from a local library or by ordering it by mail from the publisher or from PADIS itself... But the user of such a system would remain tributary of the delays and hazards of the postal systems and for the order, dispatch and payments. The delay [could be] a month or more before the document is delivered. [According to PADIS plans, it was] considered to transmit fully the original documents through teletransmission (mass traffic). This procedure would have the tremendous advantage of freeing the user from all postal delays ....But, it encounters two major obstacles: (1) the number of documents to be reproduced in this manner will in any case remain limited (and) would very likely concern the selection made by PADIS-DEV; and, (2) such a transmission system would represent a considerable financial input [due to] the very different nature of memory capacities and transmission power ... Supposing, the option for teletransmission of primary documents is to be seriously considered, it would require a complete study of its technical and financial implications...This in no way implies the reconsideration of the justifications and the validity of the objectives in terms of the objectives of the project...*54 In terms of feasibility the techniques have reached a level appropriate for data transmission support... the evolution of technology and the simultaneous reduction of costs make it possible to conceive a generalized usage...*55

68. Although most critical opinions focus on the overall design of the PADIS System and its network aspects, some comments have been expressed on its numerical component as well. One comment made by the French Appraisal Mission relates to

"... the description of the project objectives suffer from a primary ambiguity: it had to be able to cover either a network of bibliographic data bases, or on the other hand, a network of numerical data banks"*56 and continues to warn that "even if the objective is perfectly justified, it should be applicable to sets of data strictly inter-comparable. For a bank that claims to concern the different services of one state, the different states of one region and, finally, the different regions of the continent, the greatest diversity of definitions, catalogues, calculation conventions, etc.

*54 Gerard Biraud et al; p.30-33.
*55 Ibid., p.36.
*56 Gerard Biraud et al; p.29.

> should be expected. Finally, the numerical data bank component presents the same advantages and the same justifications as the bibliographic components. It undoubtedly provides a unique occassion to intensify the efforts conducted for the improvement of this device, and as such, deserves to be undertaken."*57 *58

69. The choice of the hardware and software for the processing of data has drawn equal attention. Ayouz Talar concludes that the choice of technologies suffers due to the insufficient involvement of African experts. The expert meeting that was convened by the North African MULPOC held a similar view: "... the fact that Member States did not take part in the fundamental technical choices had led to questionable choices of hardware and software."*59 Another concern was " . the capacities of this centre are those of a minicomputer [which] could hinder the development of PADIS-DEV and PADIS-COM, users being confronted with problems of access and response time which become prohibitory"*60 The opinions and recommendations of the DEVSIS-AFRICA Study Team and that of M. Pobukovsky, were strictly to the contrary.*61

70. The financial implications of the PADIS Project and the assurances of its funding were undoubtedly a critical concern:

> It is doubtful that all of them [the funds] will be realized and that they will be realized within seven years (1983-1990). The cost of the installations will strongly depend on the technologies which will be used and [which are] very rapidly progressing. ...The most unsure element of the provisional budget is the launching of a communication satellite. As for the African States whose budget is fixed arbitrarily at the global contribution of 10 percent of the total cost, we suppose that they will be ready to incur certain expenses and staff for their own centres, but we suppose that only a few will be willing and capable of contributing to the operation of the central service, in any case not before seeing the results of Phase I.*62

71. The above opinion is also shared by the experts meeting which "drew attention to the administrative and financial implications of the establishment and development of a system to be financed partly by Member States, with a contribution provided by some non-African countries and international agencies, which could not commit resources until the intentions of the African

*57 Similar remarks were expressed by Ayouz Talar, p.6.
*58 Gerard Biraud et al; p.36; p.57.
*59 UNECA/North African MULPOC; p.4.
*60 Gerard Biraud et al; p.49.
*61 Pobukovsky, M.; Software/Hardware Requirements concerning the PADIS Coordinating Centre; March 1980; 143 p.
*62 Gerard Biraud et al; p.67.

States had been clearly expressed. ... The scale of the investment meant that PADIS must be carefully planned in order to be credible which is a prerequisite for procuring funds".*63

H. Conclusion

72. Some important conclusions can be drawn at this stage. Firstly, the cornerstone for the design and implementation of the PADIS programme was laid down by the Interagency Study Team that prepared the feasibility report on DEVSIS-AFRICA. The wide-ranging recommendations contained therein have been, without any major deviation from the initial goals, progressively elaborated resulting in the present scope and function of the Project.

73. Secondly, the PADIS programme is admittedly an ambitious one in the sense that it has far-reaching implications for the development of the continent as well as tremendous difficulties for those who participate in its execution. This ambitious nature shall not be interpreted to mean mere dreams because there are sufficient tangible indications that the goals, however remote and difficult, are attainable with proper management and planning, adequate financial resources and with a sufficiently knowledgeable technical cadre.

74. Thirdly, it should be accepted from the outset that PADIS is a "frontier" project in three major ways : one, the objective situation in africa with regard to information and documentation infrastructure offers very little to enable building upon it or to modernize it. Secondly, the principles, methods and mechanisms, and particularly the technologies that need to be implanted to bring about change are of fairly recent nature even in the relatively advanced developing regions. Thirdly, the Project's aims and tasks have very few, if any, precedences with similar dimensions. Therefore, the need for flexibility, determination and innovativeness.

75. Fourthly, there are a lot of technicalities that will have to be worked out as practice takes over from theory and planning. Some of these technicalities are not readily perceptible such as the issues of data transmission; the confidential nature of certain information; and, the effects of copyright conventions - just to name a few. Certainly, there is a need to rethink and to examine in greater detail and with a view to identifing more alternatives the tele-data transmission aspects of the Project. A balance should be kept between unnecessary delays and, particularly undue haste since new, less costly, more productive alternatives are coming into the picture with the acceleration of technological development in the informatic-teleratic field.

76. The above will have meaning only if success is attained at the national level which is in turn determined by the political and financial committment of Governments; the degree of bilateral

*63 UNECA/Northern African MULPOC; p.5.

and multilateral technical and financial assistance; and the effectiveness of the lead role PADIS plays.

77. Success at the national level can be atained only if a persistent, relentless and methodical action is applied at the grassroots level; in documentation centres of ministries, research and teaching institutes, in public and specialized libraries. This task will have to be carried by trained and dedicated personnel under the guidance of a national lead agency. The priority task of PADIS shall be to assist in the proliferation of such agencies.